



COMMONWEALTH OF MASSACHUSETTS
EXECUTIVE OFFICE OF ENVIRONMENTAL AFFAIRS
DEPARTMENT OF ENVIRONMENTAL PROTECTION
Metropolitan Boston – Northeast Regional Office

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May 19, 2003

Wayne P. Marquis
Town Manager
1 Sylvan Street
Danvers, MA 01923

Randall S. Sparkas, Chair
Danvers Board of Selectmen
1 Sylvan Street
Danvers, MA 01923

RE: Water Withdrawal Permit # 9P-3-17-071.01
Five-Year Review and Amendment
Transmittal # W028099

Dear Mr. Marquis and Mr. Sparkas:

The Massachusetts Department of Environmental Protection (DEP) has completed its review of all the Water Withdrawal Permits issued in the Ipswich River Basin, including the Permit issued to the Town of Danvers (the "Town" or "Danvers"), Permit 9P-3-17-071.01 (the "Permit"). The Permit, as issued in 1991, authorized Danvers to withdraw from its sources in the Ipswich River Basin an annual average daily volume of 0.56 million gallons per day (MGD), in addition to the 3.14 MGD previously registered to Danvers. The Permit further allowed Danvers to increase that annual average daily withdrawal to 0.64 MGD in 1994, to 0.69 MGD in 1999, and to 0.81 MGD in 2004.

In accordance with the Water Management Act Regulations, 310 CMR 36.33(4), DEP initiated a review of the Permit in 1994. As a result of that review, DEP modified the permit in 1997. DEP determined that actual withdrawals by Danvers were significantly below the permitted volume allocated in the 1991 Permit. Accordingly, the Permit, as modified in 1997, provided that the authorized annual average daily withdrawal volume would remain at 0.56 MGD until 1999.

When the Permit was modified in 1997, DEP intended to require the permit holders in the Ipswich River Basin to file for a permit review in 1999. DEP delayed that requirement until the United States Geological Survey (USGS) had completed its studies of streamflow and habitat in the Ipswich River.

This information is available in alternate format by calling our ADA Coordinator at (617) 574-6872.

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After these studies were nearly complete, on December 13, 2002, DEP issued an Order to Complete requiring Danvers to submit additional information. The Town responded to the Order to Complete on March 13, 2003. Danvers had previously responded to an earlier Order to Complete associated with the Town's application for a permit amendment to increase the maximum authorized withdrawal volume for Well No. 1. DEP has reviewed the information from the USGS studies along with the Town's responses to the two Orders to Complete and has issued the Modified Permit (enclosed herein) that reflects a balance between the public's need for a safe and reliable source of drinking water and competing environmental, economic, and recreational interests.

As a result of this review, DEP has determined that there is documented evidence that water withdrawals, and to a lesser extent an increase of impervious area and development, along with the export of wastewater to other basins substantially contribute to low flow in the Ipswich River. These low flows significantly impair the ability of the river to function as a habitat for aquatic life and wildlife that are adapted to riverine conditions, an area for primary and secondary contact recreation, and a reliable source of safe drinking water. DEP has further determined that since 1997, the Town's actual raw water withdrawal above the registered volume has been significantly below 0.56 MGD, the volume originally allocated in the 1991 Permit. In these circumstances, DEP sees no reason to increase the volume above the amount originally allocated in 1991. Instead, this Modified Permit keeps the permitted volume to the 0.56 MGD originally allocated in 1991, except that DEP is allowing a slight increase, to 0.58 MGD, to address the fact that henceforth compliance will be based on raw water volumes, not finished water. The additional 0.02 MGD will cover water losses at the Middleton Pond Water Treatment Plant and the proposed Well No. 2 Treatment Plant.

DEP has further determined that unless and until conditions in the Ipswich River significantly improve, it is unlikely that any permittees in the Ipswich River Basin will be approved to increase their authorized withdrawals. In these circumstances, it is essential that all permittees keep their withdrawals at or below their authorized volumes. Consistent with this purpose, the Modified Permit provides that if for any year beginning in 2004, overall water use by Danvers exceeds 3.35 MGD (which is the authorized withdrawal volume of 3.72 MGD minus the 0.37 MGD that is allotted to Middleton under the terms of the Danvers/Middleton water contract), or overall water use by Middleton exceeds its contracted volume of 0.37 MGD, the Town that has exceeded the volume established herein shall implement a water bank that provides for keeping at least two gallons of water within the basin for every additional gallon of water demand. To avoid this requirement, the Towns should work to keep within these volumes.

To reduce the adverse impacts on the ability of the Ipswich River to sustain all its uses, DEP has established the following performance standards for permittees that withdraw water from the Ipswich River Basin for water supply purposes:

1. Residential per capita water use of 65 gallons per day or less;
2. Unaccounted for water of 10% or less; and
3. A summer withdrawal cap based on minimizing the difference between summer (May through September) and winter (January through March and November through December) withdrawals derived from each community's summer to winter withdrawal ratio.

The standards set forth above shall hereinafter be referred to collectively as the "Ipswich River Basin Performance Standards." DEP expects that both Danvers and Middleton will meet these performance standards.

The standards of 65 gallons per day or less for residential per capita water use and 10% or less for unaccounted for water are taken from the Water Resources Commission performance standards for effective water conservation for public water suppliers. While these performance standards represent the minimum standards required for compliance with the Modified Permit, the Department believes that through the implementation of all the terms and conditions of the Modified Permit, Middleton and Danvers can exceed the performance standards for residential per capita water use and unaccounted for water. DEP will review the Drinking Water Program's Annual Statistical Report when evaluating compliance with these performance standards. The reporting requirements added in the Modified Permit are intended to standardize the information submitted to the Department to assess compliance with the Modified Permit and the Ipswich River Basin Performance Standards.

Since streamflow is particularly stressed during the summer, the summer withdrawal cap specifically targets conservation when water demands are high and streamflow is low. The summer withdrawal cap is intended to reduce the difference between summer and winter water use. Based on the four-year period 1999 through 2002, communities with an average summer to winter withdrawal ratio of 1.4 or greater are required to reduce the summer-winter difference in withdrawal volumes by 50% beginning in 2004. Communities with an average summer to winter withdrawal ratio that is less than 1.4 are required to reduce the summer-winter difference by 25% beginning in 2004. The median of the four-year summer to winter withdrawal ratio is 1.4. Reductions in the summer-winter difference are based on the year, within the four-year period from 1999 through 2002, when seasonal water use was highest.

In the four-year period from 1999 through 2002, Danvers had an average summer to winter water use ratio of 1.37, while Middleton had an average summer to winter water use ratio of 1.58. Danvers experienced its highest summer water use in 2001, Middleton in 1999. Danvers shall achieve a 25% reduction in the difference between its 2001 summer and winter water use, and Middleton shall achieve a 50% reduction in the difference between its 1999 summer and winter water use. To achieve this reduction, Danvers shall keep its water use at or below an average daily volume of 3.28 MGD, and Middleton shall keep its water use at or below an average daily volume of 0.56 MGD, from May 1st through September 30th. Danvers' overall system-wide water use from May 1st through September 30th shall not exceed the seasonal cap of 501.84 million gallons; Middleton's overall system-wide water use from May 1st through September 30th shall not exceed the seasonal cap of 85.68 million gallons. Danvers was able to limit summer water use to within the seasonal cap volume in 2000 and 2002; Middleton came close to meeting the cap in 2002, with a May-September average daily volume of 0.58 MGD.

To assist permittees in complying with the Ipswich River Basin Performance Standards for residential per capita water use and seasonal water use, and to improve streamflows so that the Ipswich River can once again function as a viable habitat for aquatic life adapted to riverine conditions, and remain a reliable source of safe drinking water, DEP has required the following restrictions on nonessential outside water use:

1. All permittees withdrawing water from the Ipswich River Basin for public water supply purposes shall institute voluntary restrictions on nonessential outside water use whenever streamflow in the Ipswich River falls below 0.56 cubic feet per second per square mile of drainage basin (cfs/m) for three consecutive days in the period from May 1st through September 30th. The streamflow threshold of 0.56 cfs/m is based on wetted perimeter flow for a natural site in the Ipswich River as determined by the USGS habitat assessment study. A fully wetted channel bed in riffles is an index of the carrying capacity of a stream that is proportional to fish-food producing areas.
2. All permittees withdrawing water from the Ipswich River Basin for public water supply purposes shall implement and enforce mandatory restrictions on nonessential outside water use whenever streamflow falls below 0.42 cfs/m for three consecutive days in the period from May 1st through September 30th. Based on evaluation of streamflow requirements, USGS determined that 0.42 cfs/m is a reasonable target for habitat protection necessary to support aquatic life adapted to riverine conditions. At a minimum, mandatory restrictions on nonessential outside water use shall include restrictions requiring hand-held hoses only and limiting the hours for outside watering to exclude 9 AM to 5 PM, when evapotranspiration is typically the highest. Notwithstanding the foregoing, irrigation of public parks and recreational fields by means of automatic sprinklers equipped with moisture sensors or similar control technology may also be permitted outside the hours of 9AM to 5 PM. Enforcement of mandatory restrictions shall include the assessment of penalties or the imposition of fines for violations.

A notice of the voluntary and mandatory restrictions shall be published in the local newspaper. When streamflow is greater than the thresholds set forth above for a period of seven consecutive days, the corresponding level of restrictions may be lifted.

The restrictions set forth above apply to nonessential outside water use. The term “nonessential outside water use” includes uses that do not have health or safety impacts, are not required by regulation, and are not needed to meet the core functions of a business or other organization. Examples of nonessential outside water uses include irrigation of lawns and ornamental plants; washing of vehicles unless necessary for operator safety (subject to the exceptions set forth below); washing of building exteriors, outside structures, streets, sidewalks, and parking lots (with the exceptions set forth below); the filling of swimming pools and hot tubs; and the operation of decorative pools and fountains. Examples of essential outside water uses may include water use for the production of food and fiber and the maintenance of livestock and poultry; outside water use by plant nurseries to maintain their stock; the watering of golf course greens; the washing of vehicles by commercial car washes, maintenance facilities, and dealers; and the washing of exterior building surfaces including windows, parking lots, driveways or sidewalks, prior to application of paint, preservatives, or stucco, or for the preparation of the surface prior to paving or repointing of bricks, or if required by health and safety regulations.

To enable Danvers and Middleton to comply with the Ipswich River Basin Performance Standards for residential per capita water use and seasonal water use, the Modified Permit requires that in any year beginning with calendar year 2004 that either Town is not in compliance with these Performance Standards, the Town that is out of compliance shall develop and implement an enhanced water conservation plan. In light of this provision, DEP intends to review at least annually the progress that each permittee has made in meeting the Ipswich River Basin Performance Standards and in complying

with the requirements of the Modified Permit. DEP will take whatever action it deems appropriate to bring permittees into compliance with the modified permits and the Ipswich River Basin Performance Standards, including without limitation requiring more stringent restrictions on nonessential outside water use, further modifying the permits in the Ipswich River Basin, and/or initiating enforcement actions with or without the assessment of civil administrative penalties.

DEP understands that the Town of Middleton is not the listed in the Modified Permit as the permittee. Nevertheless, DEP expects the Town of Middleton to cooperate in the implementation of all the terms and conditions of the Modified Permit including the conservation requirements as though it was the permit holder. The Water Management Act, M.G.L. c. 21G, sec. 14, expressly authorizes DEP to issue such orders as are reasonably necessary to aid in the enforcement of the provisions of the Act, including requiring compliance with such terms and conditions as are reasonably necessary to effect the purposes of the Act. If DEP determines that Middleton is not fully implementing the actions called for in the Modified Permit, DEP will take whatever action it determines is appropriate to require Middleton to implement these actions including without the limitation the issuance of unilateral enforcement orders under the Water Management Act, M.G.L. c. 21G, sec. 14. That being said, DEP remains committed to working with Danvers, Middleton, and all the Ipswich River Basin permittees so that the Ipswich River may once again sustain all its uses as a habitat for aquatic life and wildlife that are adapted to riverine conditions, a place for secondary and primary contact recreation, and a reliable source of safe drinking water.

DEP is aware that restrictions on nonessential outside water use have already caused, and may in the future cause, an increase in the number of wells that are not subject to regulation under the Water Management Act and are used solely or partly for irrigation ("unregulated irrigation wells") in communities within the Ipswich River Basin. The cumulative impact of these wells not only adversely affects the ability of the Ipswich River to function both as a viable habitat for aquatic life and a reliable source of safe drinking water, but also undermines the effort to reduce nonessential outside water use in the Ipswich River Basin during the summer, when flows are low. Because of the stressed nature of the Ipswich River, DEP has included among the Ipswich River Basin Performance Standards a performance standard that expressly acknowledges that it is appropriate to subject the use of unregulated irrigation wells located within communities wholly or primarily in the Ipswich River Basin to the same restrictions on nonessential outside water use triggered by streamflow thresholds and required by the Modified Permit that apply to customers of the public water system. Communities that restrict the use of unregulated irrigation wells while demonstrating compliance with the Performance Standards for residential per capita water use and seasonal water use will avoid subjecting the customers of the public water system to a total ban on nonessential outside water use, whenever streamflow in the Ipswich River is below 0.42 cfs^m for three consecutive days between May 1st and September 30th.

DEP wishes to commend the Town of Danvers for taking a number of steps aimed at ensuring that the Town has a safe and reliable source of drinking water both now and in the future. To ensure the continued success of this effort, it is essential that all Town departments, boards, officials, and employees in both Danvers and Middleton work together to comply with the terms and conditions of the Modified Permit including without limitation the water conservation requirements.

The June 2000 Drought Management Plan stated that the top twenty water users consumed nearly 25% of the total water used by the Danvers Water Department in 1998. Given this high percentage, any program to reduce water use in Danvers and Middleton must target large users. The Modified Permit requires Danvers to implement a plan to reduce water use by the ten largest customers in Danvers and the five largest customers in Middleton, and report on the effectiveness of that plan by March 1, 2005. In the Modified Permit, DEP expressly reserves the right to require the Towns to implement additional measures to reduce commercial and industrial water use.

The Modified Permit includes amendment of the permit to increase the maximum authorized daily withdrawal volume from Well No.1 and its two proposed replacement wells from 0.29 MGD to 0.86 MGD. Danvers has indicated that its intention in seeking this increase is to use Wells Nos. 1 and 2 more heavily at times of the year when the Ipswich River stage is high, while allowing its surface water reservoirs to fill, and then rely on its reservoirs more heavily in the summer when the river stage is low. A March 2002 Water Supply Operations Plan submitted to DEP with the permit amendment application included an operations chart with seasonal and streamflow-based restrictions on the use of Wells Nos. 1 and 2. These restrictions are intended to prevent use of the wells from exacerbating low flows in the Ipswich River, which is adjacent to the wells. Although a prolonged pumping test of the replacement wells at Well No. 1 did not show any evidence that the wells were inducing infiltration from the river, DEP assumes that the water produced by the wells is water that would otherwise have discharged to the streambed as baseflow. The Modified Permit requires that Danvers restrict use of Wells Nos. 1 and 2 in accordance with the operations chart, as modified by DEP to reflect the streamflow findings in the USGS Ipswich River Habitat Study (WRIR 01-4161) and other USGS studies in the Ipswich River Basin.

Special Condition #3 of the Modified Permit requires that the Towns of Danvers and Middleton implement measures to protect the surface water reservoirs in accordance with 310 CMR 22.20C. Danvers shall develop a surface water protection plan in accordance with 310 CMR 22.20C(1)(d)4. Middleton shall implement zoning and non-zoning controls that meet the requirements of 310 CMR 22.20C(2) to protect the portion of the Zone A of the surface water sources that lies within Middleton. Danvers shall use its best efforts to get the Towns of North Reading and North Andover to implement these controls to protect the portions of the Zone A that lie within those Towns.

Of all municipalities in the Ipswich River Basin that have withdrawals authorized by Water Withdrawal Permits, only Danvers and Middleton do not presently have bylaws or alternative authority that enable them to legally enforce restrictions on nonessential outside water use. The lack of such authority hinders the Towns' ability to conserve water when mandatory restrictions on nonessential outside water use are necessary. Special Condition #8 of the Modified Permit includes a requirement that both Towns adopt bylaws, ordinances, regulations, or alternative authority that will enable them to legally enforce restrictions on nonessential outside water use.

Danvers and Middleton have the right to appeal the Modified Permit in accordance with 310 CMR 36.40. Any such appeal must be received by the Department within twenty-one days of the date of receipt of the Modified Permit. Only the portions of the Modified Permit that reflect a modification of Danvers' current permit may be the subject of an appeal, as the period for appealing provisions within Danvers' current permit has expired.

If you have any questions regarding this permit, please contact Kellie O'Keefe at (978) 661-7765 or James Persky at (978) 661-7767. Please note that the Northeast Regional Office of DEP will be moving in mid to late June to One Winter Street, Boston, MA 02108; the phone numbers for these staffers at the new address are not yet known. Please check the web site www.state.ma.us/dep/nero for additional information on the move.

Sincerely,

Madelyn Morris
Deputy Regional Director
Bureau of Resource Protection

MM/jp

Enclosures: Water Withdrawal Permit

Certified Mail/Return Receipt Requested

cc: Duane LeVangie, DEP, Water Management, Boston
Donald DeHart, Danvers Department of Public Works, 1 Sylvan Street, Danvers, MA 01923
Nancy Jones, Middleton Board of Selectmen, 48 South Main Street, Middleton, MA 01949
Ira Singer, Town Admin., Town of Middleton, 48 South Main Street, Middleton, MA 01949
Robert Hoffman, Middleton Department of Public Works, 195 North Main Street, Middleton, MA 01949
Jon Beekman, SEA Consultants, Inc., 485 Massachusetts Avenue, Cambridge, MA 02139-4018
Douglas R. DeNatale, Earth Tech, Inc., 196 Baker Avenue, Concord, MA 01742